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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/698,970

10/31/2003

R. Rox Anderson

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BOSTON, MA 02110

EXAMINER

WOO, JULIAN W

ART UNIT

PAPER NUMBER

3731

MAIL DATE

DELIVERY MODE

07/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/698,970	Applicant(s) ANDERSON ET AL.	
	Examiner Julian W. Woo	Art Unit 3731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/25/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
2. Claims 16-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tankovich (5,897,549) in view of Eckhouse et al. (5,964,749). Tankovich discloses the invention substantially as claimed. Tankovich discloses, at least in figure 1 and in col. 2, lines 33; col. 3, line 19 to col. 4, line 34; and col. 5, line 42 to col. 7, line 1; a method of inducing remodeling of the skin, dermal skin rejuvenation, or tightening of human skin (e.g., by denaturing of collagen or after removal of denatured tissue); where the method includes generating a beam of radiation having a wavelength of between 1.3 and 1.8 microns (e.g., 1.54 microns), directing the beam of radiation to a targeted dermal region, causing sufficient thermal injury to the targeted dermal region (denaturing proteins or protein molecules, i.e., collagen fibers) to elicit a healing response to cause the skin to

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remodel itself and stretching the skin disposed above a targeted dermal region (i.e., where skin is inherently stretched by contacting a waveguide with the skin—see col. 5, lines 49-61). However, Tankovich does not disclose cooling an epidermal region of the skin above the targeted dermal region before and/or during the step of causing thermal injury, generating a beam of radiation having a fluence as claimed, directing the beam of radiation to a targeted dermal region at the depth below a wrinkle as claimed, accelerating collagen synthesis, causing thermal injury to increase extracellular matrix constituents or activating fibroblasts, and partial denaturization of collagen fibers. Eckhouse et al. teach, at least in col. 1, line 66 to col. 2, line 7 and col. 3, lines 21-65; cooling an epidermal region of the skin above a targeted dermal region before and/or during the step of causing thermal injury, generating a beam of radiation having a fluence as claimed (e.g., 100 J/cm^2), directing the beam of radiation to a targeted dermal region at the depth below a wrinkle as claimed (e.g., 100 microns); and the shrinkage of collagen molecules (inherently caused by the partial denaturization of collagen fibers), which inherently lead to the acceleration of collagen synthesis or the increase of extracellular matrix constituents by activation of fibroblasts, thus leading to “increasing the elasticity of the skin and collagen” (see col. 3, lines 21-26). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made, in view of Eckhouse et al., to modify the method of Tankovich, so that an epidermal region of the skin is cooled above the targeted dermal region before and/or during the step of causing thermal injury, a beam of radiation having a fluence as claimed is directed to a targeted dermal region at the depth below a wrinkle as claimed,

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and collagen fibers are shrunk (i.e., partially denatured). Such modifications would allow the method of Tankovich to remodel and rejuvenate the more superficial formations of sub-epidermal tissue (i.e., at wrinkles) without undue thermal injury to the epidermis.

3. Claims 38-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tankovich (5,897,549) in view of Eckhouse et al. (5,964,749), and further in view of Sand (4,976,709). Tankovich in view of Eckhouse et al. discloses the invention substantially as claimed. Tankovich in view of Eckhouse teaches a method of treating human skin that includes generating a beam of radiation having a wavelength having the tissue absorption coefficient of collagen, but does not disclose that the tissue absorption coefficient is in the range of between 1 and 20 cm^{-1} . Sand teaches irradiation of collagen, in col. 6, lines 55-61 and col. 8, line 64 to col. 9, line 3; where collagen as applied in cosmetic surgery has an absorption coefficient of 15 and 120 cm^{-1} , a range which includes values in the range as claimed. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to generate a beam of radiation having a wavelength having the tissue absorption coefficient in the range of between 1 and 20 cm^{-1} . Such a wavelength would produce shrinkage of collagen and its partial denaturing, so that irradiated skin would be rejuvenated, tightened, or remodeled as claimed.

Response to Arguments

4. Applicant's arguments with respect to claims 16-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Freiberg (5,139,494) and Ghaffari (5,344,418) teach optical systems each including a source of irradiation and a cooling source. Knowlton (5,919,219 and 6,241,753) teach irradiation of skin and partial denaturing of collagen.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian W. Woo whose telephone number is (571) 272-4707. The examiner can normally be reached Mon.-Fri., 7:00 AM to 3:00 PM Eastern Time, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jackie Ho can be reached on (571) 272-4696. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Julian W. Woo
Primary Examiner

July 12, 2007